

Gamma Stargazing: On Graveyard Shift at Solar Power Tower

"The same solar instruments at Sandia that pursue new energy options for mankind in the daytime, at night explore the absolute frontiers of knowledge about the universe," says half-time astronomer Crawford MacCallum (1271).

That's because three steerable dishes at the Distributed Receiver Test Facility (DRTF) can work around the clock: catching the sun's rays by day and the stars' rays at night. "What's more, the size of the mirrors and the imaging capabilities of the optics designed for the sun happen to be ideal for looking at gamma radiation from the stars," says Crawford.

Looking for evidence of ultrahigh-energy — about 100GeV (10^{11} electron volts) — gamma rays is a team headed by Carl Akerlof, visiting particle physicist from the University of Michigan. The group's project is funded by his university, whose funding in turn includes a DOE contract, and by development grants from the state of California.

Difference Between Day, Night

Carl's "graveyard" shift is possible at DRTF with a bit of sleight of hand — and the use of a "cherry picker." Come the end of their normal working day, the solar energy people can simply shut off the

We 'gamma star collaborators' are indebted to the staff at Sandia's solar facility for being instrumental in getting us going. We're very happy about the staff's enthusiasm and the great degree of cooperation we've received. — Carl Akerlof

heat engine in the bipod at the center of each of the two 11-metre dishes and go home. Then Carl's team comes on site and hoists an additional mirror with its supporting structures across from the center of each dish. This arrangement allows a double-mirror bounce to collect and focus the dim light. Then Carl adds a hexagonal set of seven "light amplifiers" (photomultiplier tubes). This allows the concentrated light signal to bounce onto a forward-facing detector so that a "snapshot" can be made — with some fast-timing electronic circuitry — of the gamma-ray shower (see "Team Basks in the Glow").

And, presto! An instant astrophysics lab in Coyote Canyon . . .

Getting Off the Ground

Carl's experiments are just getting off the ground. Last summer was spent on development and physical installation of the equipment. The most time-consuming aspect was hooking up coaxial cables

Space isn't remote at all. It's only an hour's drive away if your car could go straight upwards. — Fred Hoyle, *Observer*, 1979

that run from the photodetectors to microcomputers in a nearby trailer. Also, a purple (red plus blue) filter was installed to eliminate background light from city lights and airplane traffic. (The work schedule revolves around moonless nights.)

Working with Carl are four colleagues from the University of Michigan: physicist Don Meyer, graduate student Robert Tschirhart, and undergraduates Scott Horner and Brian Arbie. Then there are physicists from the University of California at Riverside: Tümay Tümer and Al Zych, and graduate student Jan Siemieniowski; and from Jet Propulsion Lab (at Pasadena): Bill Wheaton, Carl's daughter Karen also lent a helping hand. Crawford MacCallum's the Sandian connection — who did some computer modeling of the shower's pulse shape.

(Continued on Page Five)



AD ASTRA PER ASPERA ("to the stars the hard way") is not just the motto of Kansas; it's been Carl Akerlof's *modus operandi* (pardon all the Latin). Here stargazer Carl has been swung up to the top of the solar collector, where he installs an ultraviolet light filter. The other 11-metre dish is off on the right. Carl's team spent the summer ankle-deep in mud laying cables; fall's cloudy nights have also slowed down the work.



LAB NEWS

VOL. 38, NO. 24

SANDIA NATIONAL LABORATORIES

DECEMBER 5, 1986

Two Easy Pieces

New Base Decal's Ready For the New Year

Time has expired for the Sandia decals on vehicles having access to the Base. "We'll be throwing the old decals away," says Gene Smit (3411), program coordinator. "And the new ones will be phased in early next year."

This month, Sandians in Albuquerque will be receiving renewal letters via interoffice mail. New decals will be assigned and returned through interoffice mail in January. (Retirees and surviving spouses will be notified by letter, also in December, and should receive their decals by March.)

'Painless' System

The new, two-piece decal is made of a material that's substantially more durable than the one used up to now.

The decal's a handsome one, too, with black and Sandia-blue lettering on a reflective silver background (see photo on Page Four).

The Badge Office will continue to be the hub of decal activity, and will use a new registration system that's "designed to be painless," says Gene.

- The date expiration tab — with the first batch stencilled for use until 1990 — is a separate sticker and the only segment that need be renewed every three years.

- The registration form has been simplified to allow registration of multiple vehicles. The same form will be used for decals and temporary passes.

- Transferability: Any Sandian with authorized

(Continued on Page Four)



SPORTING A NEW DECAL PROTOTYPE, a Pantera that happened to be on hand in the parking lot gets to be a model car — temporarily — for Gene Smit (3411), decal program coordinator.

Antojitos

"Boring, Damning Fact: He Was an Engineer" It's the test pilots who get the glory, not the design engineers -- or so says an article in the late, lamented *Science* 85: "The odd thing is that most engineers don't seem to mind their status. This is partly because of self-selection -- it's not a field that attracts raging egotists -- and partly because they're so rational that they realize why they don't make good copy or good television. In explaining their work, they rarely say anything comprehensible, let alone interesting, and they have not mastered the drawl [of the test pilots]. They wear short-sleeved shirts and ties -- frequently hideous ties -- instead of manly flight suits dappled with official patches. They don't really do anything that anyone can appreciate. They work not in bold strokes but in number-crunching detail, work that becomes dramatic only when something goes wrong. And there are always too many of them sharing the credit.

"In the soul of a true engineer, the only thing that really matters is being allowed to tinker in peace on something until it works. [And even failures are useful because] it's always good to do something bad every now and then just so nobody tries to do it again for a long time."

Well, that's how we "engineering lab" folks are perceived out there. Reasoned rebuttals only, please.

* * *

Speaking of Rebuttals A couple of items in last issue's spelling quiz attracted enough attention to assure us that the column does get read; that's good. We learned that by slipping up a bit; that's bad. First, current Tech Writing style hyphenates "electro-optic." Good idea; avoids misreading the word as "elec-troop-tic." Second, "discreet" is correct if you mean "able to keep a prudent silence"; for example, "the illicit lovers were discreet about their affair." Since such sentences seldom work their way into Sandia Tech Reports, the other spelling, "discrete," is likely more useful; "discrete" means individually distinct, a separate entity, such as in "discrete bits of data."

* * *

Today's Quiz Rank the following days based on the volume of AT&T long-distance calls made: a) Valentine's Day; b) Father's Day; c) Christmas Day; d) Mother's Day; e) an average weekday. Okay, got your answers? Here are AT&T's (for 1984): 15.3 million calls on an average weekday, 17.6 million on Father's Day, 20 million on Mother's Day, 20.6 million on Valentine's Day, and 21.6 million on Christmas Day. Call now to reserve a line for Christmas!

* * *

Wonder If They Griped About the Pension Plan Bob Colgan (3153) found this little ditty (to be sung to the tune of "Rock-a-Bye Baby") in the south Yorkshire village of Ripon during one of his several trips to Ireland. Like many other English towns, Ripon had a poorhouse in the 18th and 19th centuries.

Hush-a-bye baby, on the tree top,
When you grow old, your wages will stop;
When you have spent the little you made,
First to the poorhouse and then to the grave. ●BH

Supervisory Appointments

TED SCHMIDT to manager of Reactor Development and Applications Department 6450.

Ted worked at the Labs during 1964-65 as a classification analyst, and then left to complete his education. Since his return to Sandia in 1969, he has worked in reactor studies organizations in Tech Area V. He worked on the design of SPR III (a fast reactor), was responsible for testing of nuclear weapon fissile components, and has performed in-pile fast-reactor safety experiments.

In April 1976, Ted was promoted to supervisor of Reactor Source Applications, the division that operates the pulsed reactors for the Labs. Since then, he's headed the Reactor Applications, Post-Accident Heat Removal Studies, and ACRR Reactor Safety Experiments divisions. In recent years, his work in reactor coolability programs has included extensive interaction with foreign scientists.

Ted has a BS in EE and an MS and a PhD in nuclear engineering, all from the University of Arizona. He was an officer in the U.S. Army, stationed from 1961-64 at Sandia Base with the Atomic Weapons Training Group.

He is a member of the American Nuclear Society and has participated in its Standards Committee for Research Reactors.

Ted's spare time is spent on family activities, travel, skiing, and racquetball. He and his wife Janice live in NW Albuquerque. They have three children.



TED SCHMIDT (6450)

JAMES LEE to supervisor of Simulation Physics Division 1231.

James has worked in X-ray source development programs since he joined the Labs in November 1980 as a member of Simulation Technology Division 1232. His work has been in Simulation Technology Labs projects, including developing an electron beam diode for Saturn, and studying the drift transport of intense electron beams in an applied magnetic field.

He has a BS in physics and math from Iowa State University and a PhD in experimental high-energy physics from Caltech.

James is a member of the American Physical Society. He spends his spare time on music and fishing. He and his wife Kathleen have three children and live in the NE Heights.

The Look of Music



Spearmint is a cool column, so smooth it must be glass. Lemon pricks face, arms, and hands with sharply pointed spears. Taste has shape, sound has color.

Synesthetes are people with a brain condition that leads to a hallucinatory welding of senses. And the poetry of their perceptions, neurologist Richard Cytowic suggests, may be a matter of relating to the world in an evolutionarily older manner. . . . Synesthetes "are living cognitive fossils," Cytowic says. "They have a more fundamentally mammalian way of perceiving."

Science News

LAB NEWS

Published Fortnightly on Fridays

SANDIA NATIONAL LABORATORIES

An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA
TONOPAH, NEVADA
AMARILLO, TEXAS

Sandia National Laboratories is operated by Sandia Corporation, a subsidiary of AT&T Technologies, Inc., and a prime contractor to the U. S. Department of Energy

BRUCE HAWKINSON, Editor
PHYLLIS WILSON, Writer
IRENE DUBICKA, Writer
RANDY MONTOYA, Photographer
GERSE MARTINEZ, Asst. Photographer
JANET WALEROW, Editorial Assistant
SHELLY BARNES, Assistant
BARRY SCHRADER, Livermore Reporter


Member International Association of Business Communicators



JAMES LEE (1231)

HE CAME RIGHT DOWN 'F' STREET . . . 'Twas the day after Thanksgiving, when the parking lots were empty and not much was stirring on Base, only a skeleton crew of Sandians. Santa Claus got his Percherons close enough to the LAB NEWS building (814), so our wish lists are taken care of . . . Then he went on to KAFB's Mini-Mall to give children rides in his wagon.





SANDIA LIVERMORE NEWS

VOL. 38, NO. 24

SANDIA NATIONAL LABORATORIES

DECEMBER 5, 1986

Special SWAT Pin Earned

Lt. James: Contract Employee's a Shooting Star

Lt. Pam James of Sandia Livermore's contract security force has become the first woman at the Labs to pass the rigorous Special Response Training-3 course at the Central Training Academy in Albuquerque.

The course is the third and final level for DOE security people on the SWAT (Special Weapons and Tactics) team, which is trained to handle hostage situations and terrorist confrontations at national laboratories and other DOE installations.

Pam described the 11-day conditioning program as "physically and mentally tough." The trainees begin each day with a mile-and-a-half run. That's followed by a battery of calisthenics and then another run of the same distance. Then they go to class, which is no time to sit down with a textbook but rather a series of physically demanding exercises.



HER SWAT COURSE OVER, contract employee Lt. Pam James can now rest on her laurels a bit. A special weapons and tactics pin from DOE now becomes part of her everyday gear.

The requirements to pass the intensive course include qualifying with a .45 calibre pistol on both standing and moving targets, going through an obstacle course while shooting, training on rough terrain, and qualifying with the MP5 submachine gun.

According to Pam, the most critical and trying part was simulated hostage rescue (using dummies as targets), in which all 14 trainees — using live ammunition — attacked a "shooting house." Their goal was to neutralize or kill the "kidnappers" and yet leave the "hostages" unscathed.

"Rescue requires a lot of mental concentration and shooting skills," Pam recalls. "We must hit the right targets precisely in the critical spots."

The course was taught by instructors from the Central Training Academy and specialists from the Los Angeles Police Department. Those who pass receive a certificate — and a special weapons and tactics pin from the DOE that becomes part of the authorized uniform wear.

Pam joined the contract security force, now Advance Security, at Sandia Livermore three and a half years ago. She started out as an inspector, then moved up to tactical sergeant and day shift sergeant. On March 28 of this year she was promoted to Lieutenant in charge of all personnel on the day shift.

She first became interested in police work at Cal State-Hayward, which she attended for two years and where she majored in criminal justice. Since beginning work for Sandia's security contractor, Pam has gone through two previous SWAT training courses at Albuquerque, plus a bomb detection course at Baltimore, Md. Originally from Hayward, where she spent her high school years, she is now a resident of Tracy. Her older brother is also in police work, serving as a sergeant in the detective division at Emeryville's police department.



RIGHT ON TARGET with an MP5 submachine gun is Livermore's Advance Security guard Lt. Pam James, who got through some grueling training at an academy in Albuquerque.

Congratulations

Mike Ferrario (8152) and Sandy Mondot (8264), married in Livermore, Nov. 22.

Sympathy

To Lutz Dahlke (8444) on the death of his father in Corvallis, Ore., Nov. 4.

To Ollie Rohrback (8186) on the death of his father in Lodi, Calif., Nov. 12.

To Ed (8442) and Cindy (8302) English on the death of his father, her father-in-law, in Coeur d'Alene, Idaho, Nov. 16.

(Continued from Page One)

Base Decal

access to Kirtland Air Force Base who buys a car with a decal from another Sandian can continue to use that decal after notifying the Badge Office.

• A call to the Badge Office will be sufficient notice of decal destruction. Signed statements will no longer be required.

• Permanent license plates will be required for all vehicles before any decals are issued for them. Vehicles on temporary registrations will use temporary passes.

• Bicycles will no longer be registered or issued any decals; this change is in accordance with KAFB directives.

• In the future, the registration renewal notice won't be a blank form. Instead, a computer-generated printout will be sent to each registered Sandian, who will only have to mark changes — additions or subtractions of vehicles, as necessary. And, at renewal time, only the date expiration tab needs to be placed on the vehicle.

• A new on-line computer system, ADNET, will support the decal registration program.

For Appearance' Sake

Looks may not be all, but they do count when the guards at the gate have to squint at the decals in the poor light of dawn or twilight. And the large ID numbers boldly stencilled on the middle of the decals will be a visible improvement over the tiny numbers that used to be stamped on the right-hand corner, a spot that often peeled.

• KAFB has also approved placement of the decal on the lower-left part (driver's side) of the windshield — for those of us having cars with bumpers that make decal attachment difficult.

Speaking of attachment: The old decal will have to be removed completely before the new one is stuck on the left-hand bumper or windshield. Careful scraping with a razor blade, followed by cleaning to get rid of dust, dirt, and oil, should do the trick. As long as the surface temperature is above 50 degrees F, the new decal should go on easily — and stay on without peeling.

Questions Answered

Phil Rivera (3437) will administer the new system. If any problems or questions arise, call Phil or his staff at the Badge Office on 4-3668.

Any retirees or surviving spouses who have not received a renewal notice in the mail from Benefits by the end of December should either write to Division 3543, P.O. Box 5800, Albuquerque, N.M., 87185, or call 844-7433 or 844-3545.

Retiree Deaths

Roger Williams (68)	July 8
Cecil Johnson (73)	July 9
Ethel Hooten (93)	July 18
Karl Lindell (80)	July 19
Fred Drummond (77)	Aug. 2
Gilbert Oliver (81)	Aug. 6
Richard Sanchez (78)	Aug. 10
Chester Fornero (64)	Aug. 11
Bruce Scott (85)	Aug. 13
Felix Padilla (70)	Aug. 16
Theodore Payne (73)	Sept. 5
Walter Sims (74)	Sept. 16
John Carter (72)	Sept. 24
Truman Daniel (72)	Sept. 25
Elliot Harris (59)	Sept. 26

Sympathy

To Frank Whiston (7483) on the death of his mother-in-law in Clovis, Nov. 19.

To Bob Colgan (3153) on the death of his mother-in-law in Albuquerque, Nov. 21.

8
7



Sandia National Laboratories

000000

KIRTLAND AFB

AF FORM
1219 JAN 88

NEW TWO-PIECE DECAL has a silver background, with the ID number and KAFB lettering in black and the border, thunderbird logo, and SNL lettering in Sandia blue. The tab (on left) is a separate piece: First one will have "90" — not "87" — stencilled on it for year of expiration. Next (three-year) renewal will require only an updated tab.

Events Calendar

Dec. 5-6 — Annual Holiday Bazaar, 10 a.m.-4 p.m., Sandia Preparatory School gymnasium (520 Osuna Rd. NE), 294-4405.

Dec. 5-12 — "Waterworks," juried watercolor exhibit by the NM Watercolor Society; 9 a.m.-6 p.m., Thompson Gallery, UNM Union Bldg., 277-2331.

Dec. 5-12 — "Earth and Fire, an Elemental Art Show" by Sue McQueen; 7:30 a.m.-10 p.m., Union Gallery, UNM Union Bldg., 277-2331.

Dec. 5-7, 12-14 — "The Christmas Kid," by Joe Paone and Karen Babb, a story about the magic of growing up; 7:30 p.m. Fri., 6 p.m. Sat., 2 p.m. Sat. & Sun. matinees; Albuquerque Little Theatre, 242-4750.

Dec. 5-14 — "Richard III," Shakespeare's tale of murder and betrayal for power; 8 p.m. Fri.-Sat., 6 p.m. Sun.; Vortex Theatre (Buena Vista & Central), 247-8600.

Dec. 5-21 — "Keeping Score," musical comedy; 8 p.m. Fri.-Sat., 3 p.m. Sun.; Second Story Arts Center (behind Albuquerque Little Theatre), 242-4750.

Dec. 5-31 — Exhibit, "From the Weaver's View: Indian Baskets of the American West"; 9 a.m.-4 p.m. Mon.-Fri., 10 a.m.-4 p.m. Sat.; middle gallery, Maxwell Museum of Anthropology, 277-4404.

Dec. 5-Jan. 5 — Exhibit, "Tiger, Tiger," photographs of animals of India; 10 a.m.-5 p.m., NM Museum of Natural History, 841-8832.

Dec. 5-Feb. 2 — "Maya, Treasures of an Ancient Civilization"; 11 a.m.-5 p.m. Tues., 1-9 p.m. Wed., 11 a.m.-9 p.m. Thurs.-Fri., 10 a.m.-5 p.m. weekends; Albuquerque Museum, 243-7255 or 242-4600.

Dec. 5-July 31 — Exhibit, "Maya: The Image from the Western World"; 9 a.m.-4 p.m. Mon.-Fri., 10 a.m.-4 p.m. Sat.; main gallery, Maxwell Museum of Anthropology, 277-4404.

Dec. 6 — Keller Hall Jazz Series 1986, "The Jazz Composers' Orchestra"; 8:15 p.m., Keller Hall, 277-4402 or 842-6659.

Dec. 7 — Showtime at the KiMo, On Stage Series: "Amahl and the Night Visitors"; 8 p.m., KiMo Theatre, 848-1374.

Dec. 7 — Children's fashion show, 3-4:30 p.m., free, South Broadway Cultural Center, 848-1320.

Dec. 10 — UNM Press Lecture Series, "Western Water Policy in Transition" by F. Lee Brown, editor of *New Courses for the Colorado River*; 7:30 p.m., Woodward Hall, 277-2346.

Dec. 12-13 — Classical concert, NM Symphony Orchestra, performing selections from Monteverdi and Adams featuring the NMSO Chorus, and Lilian Kallir performing Beethoven's Piano Concerto No. 4 in G Major, Op. 58; 8:15 p.m., Popejoy Hall, 842-8565.

Dec. 15-19 — Feature film, "One Magic Christmas"; 3:30 p.m., free, South Broadway Cultural Center, 848-1320.

Dec. 16 — NM Museum of Natural History Lecture, "Hiking the Continental Divide" by Mary Stewer, New Mexico Forestry Department; 7 p.m., KiMo Theatre, 841-8836.

Dec. 16-Jan. 4 — "A Christmas Carol," adaptation by Barbara Field from Charles Dickens; 8 p.m. Tues.-Sat., 2 p.m. matinee Sat. & Sun. (special 1 p.m. & 6 p.m. performances Christmas Eve); KiMo Theatre, 243-4500.



Here are a couple of current volunteer opportunities for employees, retirees, and family members. If you would like more information, call Karen Shane (4-3268).

NATIONAL AUDUBON SOCIETY's annual Christmas Bird Count program, conducted throughout the U.S., Canada, and the Caribbean, is looking for novice and experienced birders for one day to list the birds they see, recording numbers and species. Data are used in scientific research on the early winter distribution of bird populations. Experienced birders will lead the three counts this year: Corrales, Dec. 20; Bosque del Apache, Dec. 21; and Sandia Mountains, Dec. 27.

KNME-TV has set aside Wednesday evening, Dec. 10 (5:30-11 p.m.), for "phone friends" from Sandia to accept pledges during its on-air fund-raising telethon.

Welcome

Albuquerque

Harry Cincotta (3426)

New Mexico

Paul Baca (2634)

Texas

Stanley Harrison (7831)

Congratulations

To Mary Ann and T. D. Raymond (1124), a daughter, Rebecca, Nov. 3.

To Jeanette and Joe (9231) Chavez, a son, Christopher Joseph, Nov. 14.

To Helen and Del Owyong (1124), an adopted son, Jonathan, 11 mos. old, arrived in America Nov. 15.

To Maureen and Dave (7832) Hendrick, married in Albuquerque, Nov. 15.

To Cheryl Laird (3425) and Steve Wilde (9214), married in Albuquerque, Nov. 22.

Words That Run and Run



You'll have heard it all before — get a word processor and you'll never know how you lived without one . . .

Harrassed secretaries at the company I once worked for told me that IBM and Wordstar were no blessing for them, mixed or otherwise. The boss quickly became aware of the ease with which alterations could be made, and so put off editing his illiterate streams of consciousness until after the first printout. Well, writers can suffer from indiscipline too. I call it "processorhea." . . .

Editors tell me that authors who had hitherto been pithy and apposite suddenly became ranting windbags. Their sentences, once as small and clean as workhouse plates, turned into great Proustian boa constrictors. The focus of their writing, once so unflinching, became blurred with muttered authorial opinions . . .

It's the temptation to *insert* that gets you; the urge to indulge in some idle hobbyhorsing with an amusing but irrelevant rider. . . . Vivid verbs and arcane adjectives seem to retain that seductive quality they once had, back in the poetry days. For some reason, the green screen can make you forget that plain words are best. Because not only is alteration easy, it's luscious. I mean fun . . .

Ted Nield, *New Scientist*

University Team Basks in the Glow of Cygnus X-3

Carl Akerlof's team has picked a star to watch: Cygnus X-3, a double star that's roughly 217,560 trillion miles away. Some people believe that it's one of the three most luminous objects in the galaxy.

"We're interested in it as a source of high-energy gamma rays [radiation with wavelengths at the shortest end of the electromagnetic spectrum] that emanate from the universe," says Carl.

But gamma rays themselves don't reach the ground. And peering at the faint glimmer of Cygnus X-3 — at the far edge of the galaxy — is not easy. Not enough energy is liberated from its gamma rays to be readily picked up at a ground-based lab. That's because the gamma rays are converted into an electron-positron pair about 10-15 kilometres above the earth. A repetitive multiplication process results in emission of more gamma rays — that are then reconverted into more electron-positron pairs. In the end, millions of electrons and photons build up.

Bluish Light

The resulting Cherenkov radiation — electromagnetic cascades or showers — is a bluish light in the visible portion of the spectrum. That's not to say that the researchers are bathed in a bluish glow sufficient to read the LAB NEWS by. Far from it. According to Carl, the pulse is equivalent to the faintness of a clock with an LED display on the surface of the moon, as seen from earth. It simply has to be amplified electronically, as much as a quarter-million to 10 million times, just to be detectable with instruments.

Cherenkov radiation is a conical wave of light produced by an electron traveling faster than the speed of light in the local medium: air. (It can be compared to the blue glow — energy being given off as light — seen at the bottom of Sandia's Annular Core Research Reactor in Area V after it's fired.)

What complicates things is that nature is responsible for a competing process: cosmic ray showers that are proton-initiated and also produce Cherenkov light. In this case, there's a large flux of protons and perhaps heavier nuclei, also very energetic, that enter the upper atmosphere. There the charged particles collide with oxygen or nitrogen molecules to create pi-mesons, most of which last a relatively long time: microseconds. The neutral members instantly decay into gamma rays and then produce their own showers only a few kilometres above the earth.

There are thousands of these cosmic ray showers for every gamma ray shower that Carl and his fellow researchers are looking for.

Ray of Hope

The best chance Carl has to find out which of the two sources he's tapping is to look for characteristic signatures — trails in the sky. Three measurements are made: pulse amplitude, pulse width, and time of arrival.



NOT A CHRISTMAS ORNAMENT but an array of photomultiplier tubes is what Jan Siemieniowski (left) and Tümay Tümer are getting ready to place into the solar collector. The device concentrates Cherenkov radiation to improve detectability of gamma ray showers from a faraway star.

The dishes are aimed at Cygnus X-3 using established maps of the sky. The dishes' angular resolution permits measurement of gamma-ray arrival directions to 1/10 of a degree.

Two of the dishes, each 11 metres in diameter, are set up to do the looking for Carl by functioning — literally — as another pair of eyes. Since the dishes are set apart by 40 metres, they act as stereoscopic (depth) detectors. They receive separate data on the time of arrival and on the angle of approach of each flare.

Gamma ray showers point back directly to their stellar source (tracing the direction of the original gamma rays, which are not scattered by inter-

The 'eyesight' of a frontier science to see where it is going is generally bad. Many times the biggest and most important developments are in totally unanticipated areas.

— Richard Lamb and Trevor Weekes, *Science News*

stellar dust or deflected by the interstellar magnetic field). So when the dishes track almost in parallel in the direction of Cygnus X-3, Carl has more certainty that he's going after the end-products of the rays he wants. (Because proton-initiated cosmic rays often come closer to the earth than do gamma rays before showering, both dishes would not spot the same shower unless they were "cross-eyed.")

In time, a third imaging detector, mounted on a smaller, seven-metre collector located 200 metres away, will improve the timing of some of the events. By having timing data from three detectors, Carl can use trigonometry to find where the showers are coming from — and so reject data that could not be coming from his star.

In fact, as an additional reliability check on data, Carl would like to see more cooperation between pairs of labs located at roughly the same longitude. That would allow even more correlations from additional sets of widely spaced high-tech "eyes." For example, simultaneous data from Tucson and Albuquerque would help to create more certainty that he's dealing with something extraterrestrial — and not electronic glitches.

Data from the heavens are very noisy. That is, the signals are embedded in extraneous information, a kind of visual static. The data usually have to be filtered very heavily before they can be analyzed. In order to pull out the hidden patterning in space and time, the statistics are, by necessity, complex.

Stargazers have to account for all the chang-

ing variables — including variations in signal quality. Interstellar gas and dust clouds in the galactic spirals can obscure the signals.

But repetitive patterns — cycles — are useful. For example, the earth's rotation modifies celestial mapping coordinates in predictable fashion. And, Cygnus X-3 is suspected to be a neu-

God does not play dice with the universe.

— Albert Einstein

tron star with a normal star orbiting around it. Therefore, the X-rays (the next longer wavelength in the electromagnetic spectrum) that are also known to emanate from it have a 4.79-hr. cycle that corresponds to the second star's eclipsing of Cygnus X-3.

At heart is a theoretical controversy. Some physicists such as Carl think of showers from Cygnus X-3 as the product of known particles, i.e., gamma rays entering the earth's atmosphere. This is the simple, tidy hypothesis. Others have suggested something much more exotic: that ema-

God not only plays dice, He also sometimes throws the dice where they cannot be seen. — Stephen W. Hawking, *Nature*

nations from the binary star are a new phenomenon in the Constellation of the Swan consisting of a previously unknown subatomic particle that they've called a "cygnet."

Nevertheless, the field is still in an early enough stage of inquiry where both ideas can be bounced around with little need for the researchers to be committed to either one.

Part of the reason for the universities' experiments here at Sandia is a basic one: to establish the validity of high-energy processes in stars. The better the data on gamma rays, the greater the odds of understanding how, why, and where space contains these intense concentrations of energy.

Tune In to Noise Out



Just before the silence of space begins in the outer reaches of the earth's atmosphere is a region that shimmers with sound. The symphony of signals found in the magnetosphere — where the geomagnetic field has trapped a plasma of charged particles — include whistle-like noises triggered by lightning and the chirping sound of the "chorus" created when an incoherent set of radio waves passes through.

Radio scientist Robert Helliwell at Stanford University and his colleagues have also shown that a radio signal at one frequency sent into the magnetosphere will grow and trigger a noisy rainbow of signals at slightly different frequencies.

New Scientist

(Continued from Page One)

Gamma Star

They've all made some initial measurements, and are trying to improve detection of the signal they're looking for — and to understand it better.

The challenge for all of them is "to open a window that no one's opened before," says Carl. By next summer, they should have some more data to model. The study is a long-range one, but no one's overly impatient. As is true in much of astrophysics, there's no special reason to hurry: The events they're observing happened 37,000 years ago. ●ID



MOCK EMERGENCY RESCUE is taken very seriously by participants at the 300-ft. drop tower in Area III.



READY FOR RESUSCITATION: Dennis Floyd (7531), left, and Luis Abeyta (7531) have just pulled "rescued" diver Darlene Maxwell from the water.

Divers in the Desert

Area III doesn't look like much of an environment for scuba divers. A few weeks ago, though, there they were — conducting a most realistic rescue diver training operation at the Water Impact Test Facility.

Test items are dropped from a 300-ft.-high drop tower at the facility into a 120-ft. x 188-ft. man-made pond that's 50 feet deep in at least one spot. Before tests, divers — all members of Coyote Canyon Test Complex Dept. 7530 — set up underwater photography equipment and other instrumentation needed for the tests. Afterward, they're back in the water to haul test items and other equipment to the surface.

The rescue training exercise — the first conducted — was to demonstrate what emergency action is required should a diver become trapped under water, perhaps as a result of getting tangled up in a net or a cable. Trainer Morys Hines of Watersports, Inc., and his assistants — diver "victims" Jim Fisher and Darlene Maxwell — demonstrated what needs to be done in case of a life-threatening situation. UNM Hospital's Lifeguard I helicopter arrived on the scene to transport the "injured." Sandia's Medical and Security organizations also participated.

Sandia Area III diving team members: John Russell, Kevin Babb, Luis Abeyta, and Dennis Floyd (all 7531), certified rescue divers; Dennis Gutierrez and Rob Tachau (both 7535), certified open-water divers. Mike Gallahan, a contract employee, is also a certified rescue diver.



UNM's LIFEGUARD HELICOPTER (photo above) is a vital link in fast transportation of an injured victim.



PANIC-STRICKEN Jim Fisher (photo on right, top center) shows rescuer Dennis Floyd (7531) how a victim might react in a real emergency.



STABILIZING DIVER FOR TRANSPORTATION to hospital are (from left) Kevin Babb (7531), Luis Abeyta, and Lt. Carol Bonney (3435).

● PHOTOESSAY by RM/PW

Crownpoint Rug Auction Offers Colorful Look at Unique Art Form

It's very apparent when you visit the Crownpoint rug auction: Free enterprise is alive and well in Navajoland. It's supply vs. demand every six weeks as buyers become proud owners of rugs painstakingly woven by Navajo women or (occasionally) Navajo men.

Buyers compete for rugs that catch their eye; sellers go home with proceeds from the sale of their rugs. Top quality rugs usually bring top prices, though an occasional bargain slips through.

If you're an auction visitor, the first thing you'll see at the auction site (the Crownpoint Elementary School) is a long line of Navajo weavers waiting to consign their rugs. The weavers wait patiently with their brown paper bags or gunny sacks until they reach the table where the rugs are checked in. Then, out of the bags and sacks come rugs of every description, color, and size — sometimes one, sometimes more.

Crownpoint Rug Weavers Assn. officials tag each rug; information on the tag includes an ID number, and the weaver's name and "hometown" — a site somewhere on the Navajo reservation, such as Two Grey Hills, Wide Ruins, Chinle, Black Mountain, Many Farms, and Window Rock. Then the rugs are placed on long tables at the back of the school gymnasium, where they can be inspected at close range by auction-goers.

Rug viewing begins at 2 p.m. the day of the auction, and continues through the afternoon until the last of the rugs is consigned and the auction is about to begin. Viewing is a very important part of the day's activities, especially if you're a would-be buyer. This is your chance to look at details: the fineness of the weave, wool quality, dyes used, size. Be sure to have a pencil and paper along — and a tape measure if you're concerned about exact size — so you can note ID numbers on rugs in which you're interested.

Close-up Inspection Important

During the auction, you'll be thankful you took the time for a close-up inspection of the rugs: when they're displayed on stage during the sale, you view them from afar. About all you can determine at that point are pattern and colors — and most please the eye. If you bid on something you didn't inspect beforehand, you may be disappointed when you pick it up later in the evening. (When I attended a recent auction, the person sitting next to me was the winning bidder on a small Two Grey Hills rug that he hadn't looked at ahead of time. He bid on the Two Grey Hills name and the reputation of its weavers for quality rugs. When he picked up the rug, however, it was apparent that he'd bought a "learner's rug"; the quality wasn't what he expected to find. The rug looked good from a distance, but not so good close up.)

After you've inspected the rugs, there's no need to go out for supper before the auction. Starting at 5 p.m., the Weavers Assn. starts serving food from the kitchen next to the gymnasium. You can choose from a variety of menu selections at nominal prices. (Navajo tacos at \$3.25 — or \$1.75 for a half taco — are



MAKING A CLOSE-UP INSPECTION of rugs is an important part of the proceedings if you're a would-be buyer at the Crownpoint rug auction.

the biggest sellers.) You'll eat in a room across the hall at Lilliputian tables, with chairs to match; after all, this is an elementary school!

After supper, it's back to the gymnasium, where the auction will be held. If you intend to get in on the auction action, you'll need to register and pick up a numbered card to wave at the auctioneer when you start bidding.

At 7 p.m. sharp, the auction gets under way. By this time the rugs have been stacked on chairs and on the floor at the back of the stage. Auctioneer Herman Coffey of Belen, homespun as they come, explains he's been presiding at the Crownpoint auction for "some 20 odd years," and has never missed a one. He warns you to be "fast on the draw" (in waving that bid card) if you're after a particular rug, because rugs are sold every 36 seconds, on average. Coffey recalls that he's sold as many as 640 rugs at a single auction. "On nights like that," he says, "you might be around here until 3 or 4 in the morning." (The night I was there, 217 rugs were for sale, and the auction ended at 10:25.)

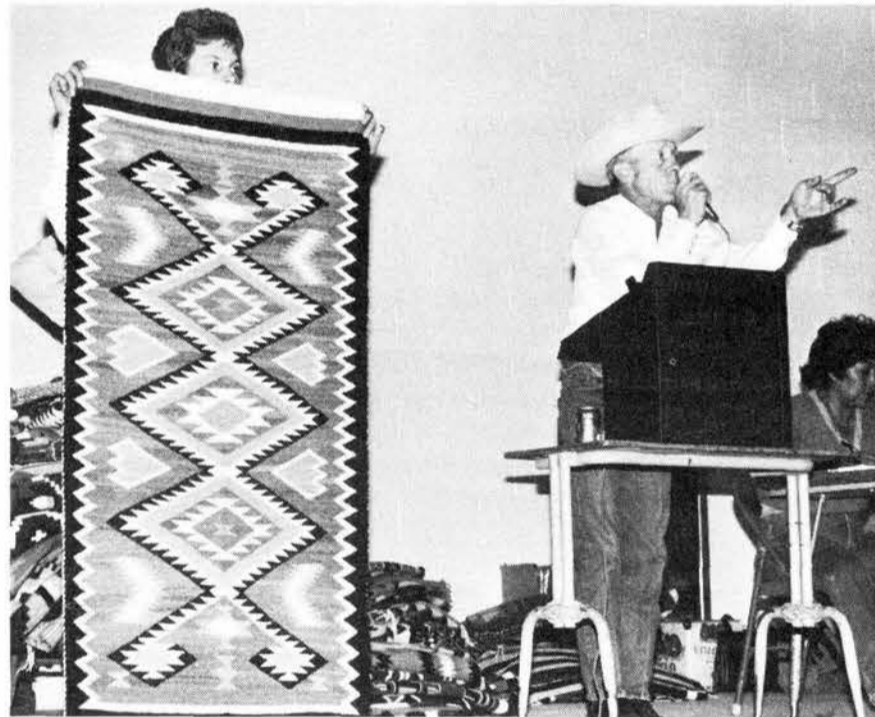
Coffey sets a minimum price on each rug to start the bidding, and tells you the name of the weaver and where she (or, in rare instances, he) is from. Coffey knows his rugs and is likely to throw in some of his own observations, e.g., homespun wool, vegetable dye, tight weave, etc. From then on, it's up to you and the others in the audience. If you want to

bid on a rug, flick your card at Coffey and his "watchers" to show you're willing to buy the rug at the price asked. That price changes quickly (upward) if several people are after the same rug, so you may wave that card several times before you're the winning bidder.

Throughout the evening, Coffey keeps the crowd smiling with his patter. Some examples:

- When a nontraditional aqua and white rug goes on the block: "Now I can't swear this is the natural color. But who knows? Over at Black Mountain [where the rug came from], they might have blue sheep."
- When the bidding gets very competitive between a couple of people, and he's coaxing for the next — and higher — bid: "Don't set there and look at me — bid! It's just money."
- When he coughs, and has to stop talking for a second or two: "You know, I got the distemper here a while back, and don't know if I'll ever shake it."

If you buy a rug during the auction, you can pick it up and pay for it anytime (cash, credit cards, travelers' checks, and good checks cheerfully accepted). Take your bid card to the check-out table at the left-front of the gym, and your rug appears like magic. Fork over the payment and you're on your way into the starlit Crownpoint night clutching your newest heirloom. ●PW



AUCTIONEER HERMAN COFFEY (right) asks for another bid as a rug is displayed during the auction.

Always on Friday

The Auction: Background, Facts You Should Know

The Crownpoint Weavers Assn., formed more than 20 years ago, sponsors the Crownpoint Rug Auction, held every sixth Friday night at the Crownpoint Elementary School. Only 20-40 rugs were for sale at the first auctions in the 60s; the average price was around \$20. Now, hundreds of rugs are for sale each time; prices at a recent auction ranged from \$20 to \$2100.

Weavers from all over the Navajo reservation converge at Crownpoint the day of an auction. As auctioneer Herman Coffey puts it, "This is free enterprise at its best. The weaver owns the rug until it's bought, and collects the price paid for it at the end of the evening." (A small percentage of the purchase price goes to the Weavers Assn. for administrative expenses.) An average auction "take" is between \$32,000 and \$35,000.

To get to Crownpoint, take I-40 west to Thoreau (pronounced "Threw"). Head north on Rte. 57 for 24 miles to Crownpoint. (The entire trip is

about 130 miles, one-way.) Once in Crownpoint, you'll pass the hospital on your left. Turn right at the next stop sign. About two blocks away, you'll see the elementary school — site of the auction — on your right.

Rug viewing starts at 2 p.m., and you can buy supper starting at 5. The auction begins promptly at 7 and continues until the last rug is put up for sale.

Rug auction dates for the coming year:

Dec. 12, 1986
Jan. 23, 1987
March 13, 1987
April 24, 1987
June 5, 1987
July 1, 1987
Aug. 28, 1987
Oct. 9, 1987
Nov. 20, 1987

'Can We Talk?' No. 1, or How's Your Mental Health?

By Arlene Price (3330)

Are you chronically fatigued even though you get a full night's sleep? How about insomnia, or sudden weight loss (or gain)? Have you lost interest in your love life? Are you irritable and unable to sit still and concentrate? Do you have unexplained headaches, backaches, stomach pain, nausea, or indigestion? Have you lost your appetite? Has your energy level been low? Do you feel listless, emotionally flat, or empty? Are the things you've typically enjoyed just not any fun anymore?

You may be suffering from depression, a common mood disturbance that too often goes ignored or untreated. Sometimes people recognize their symptoms and are afraid to do anything about them, or they feel too down in the dumps to take action.

Depression can cause a whole array of symptoms (and none of them mean you're going crazy). In fact, depression is as common as a cold. Serious depression probably affects one person in five at some time in his/her life. It's a condition that can affect people from all walks of life at any time — infancy to old age.

Perhaps you dread coming to work in the morning or spending time with your family or friends. You may have experienced not only a general slowing down but also a lack of interest in your responsibilities. You may have lost interest in your appearance. Perhaps small things have begun to bother you. You've even begun to have problems with your memory and find it difficult to concentrate, and you're wondering what's wrong with you. Perhaps you saw your family doctor who prescribed medication to help you sleep or to decrease your anxiety, but now you

feel even worse because the problems persist.

People get depressed for many reasons. One common reason is major change. For example, in the past year or so, have you lost a loved one through death or divorce or the breakup of a relationship? Have you had a career or financial setback, changed jobs, or moved to a new house? Have you had health problems, such as surgery or a heart attack? Perhaps your favorite boss has retired or your friends have moved away. Maybe you are facing stronger-than-

usual conflicts with important members of your family or with friends. Maybe you're expecting a baby or are taking on the responsibility of caring for aging parents.

Whatever the case may be, important life events, or even the accumulation of small hassles, can have an impact — leaving you feeling overwhelmed by your own life's circumstances. As a result, you're helpless, hopeless, and lost — that's depression.

What you're left with is low self-esteem, which translates into exaggerated self-blame and feelings of guilt. You may even wonder whether things are ever going to get better.

Now, the good news: Depression can be treated. You do not have to struggle with the problem alone.

Treatment methods include individual counseling, group therapy, and, in some cases, anti-depressant medication. In fact, there's a whole range of methods and approaches that can help people learn more about their problems and how to handle them effectively.

Yes, I know that seeking professional help from a psychologist or psychiatrist is the subject of a lot of old-fashioned prejudices and superstitions. But those come from fear and a lack of information — more bluntly, from ignorance.

I invite you to call me (6-0021) for further information. It's the first important step in taking care of yourself and feeling good again.

This is the first in a series of "Can We Talk" articles by Sandia's clinical psychologist, Arlene Price.

Merry Christmas — Or Is It?

Only a few lucky folks go from year to year unquenchably charged up for the holiday season. Why is it that for the rest of us the delights have become slightly sour or just plain flat? How is it that expectations, once so pleasant, now seem merely the prelude to a letdown?

Join Karl Koenig, a local clinical psychologist, for a lively and informal discussion of some ideas and suggestions about the "holiday blues" phenomenon. The discussion, sponsored by Medical, will help you understand more about the perplexing ups and downs common to this more-exasperating-than-wonderful time of year.

Bring your lunch and join us in Bldg. 815 from noon to 12:30 on Dec. 12. Spouses are welcome. ●AP

Our Town

TLC's a Day Care Home for Sick Kids

It's 7 a.m., you're getting ready for work, and your five-year-old says he hurts. Your babysitter won't take care of sick children, day care centers won't admit them, and Grandma lives 1200 miles away.

You can't take another day off because your supervisor is rumbling about unscheduled vacation. What do you do? Finding help with sick children is one of the hardest child-care problems facing working parents.

"The increase in working parents has not been matched by an increase in community support," says Lila Zurzolo (2565). "For the most part, these families are left to work out their own problems with nothing but reprimands and guilt."

Lila found a solution in TLC House, a licensed child care facility for mildly ill children ages 2-10 that opened Sept. 1. TLC House (located just behind Presbyterian Hospital at 1016 Silver SE) is operated by the YWCA and Presbyterian Hospital. The staff is trained by YWCA for day care and by Presbyterian Hospital for health care. But TLC House staff members have one other important qualification — they love children. That helps when parents are feeling anxious or guilty about leaving their sick children with other caregivers.

"I'm impressed with TLC House," says Lila. "I'd like to see more people use it. Yet many parents aren't aware of exactly what help is available or where it can be found."

House, Not Hospital

"We have successfully meshed medical and day care in one facility," says Barry Bouffard, TLC director. "It's one of the few in the country that is actually in a house, not in a hospital. It's a non-threatening environment for the children. They recover faster."

The nurses don't wear white uniforms. There

is a structured day care program with arts and crafts activities appropriate to the child's age group.

Preregistration of children — even while they're still healthy — is encouraged. "It takes at least 20 minutes to admit a child who isn't registered," says Kathy Byers, TLC charge nurse. TLC House will send a registration package upon request. Reservations can be made up to 24 hours in advance and are on a first-come, first-served basis. For hours, call TLC House on 841-1693. Descriptive brochures can be picked up in the LAB NEWS office in Bldg. 814.

TLC House can care for 22 children. The cost is \$15/day or \$2/hour, and includes fruit and vegetable juices. The hospital provides soup for \$1 or a full meal for \$2. Parents can also bring snacks or lunches.

There are five rooms in the house, with space enough to put children with contagious illnesses in separate rooms. "Children with measles are the only ones we really can't take," says Kathy.

All children are examined by a TLC nurse before they are admitted. Immunization records are required. Children who are not toilet-trained will not be admitted. If medications are required, a qualified staff member will administer them according to your physician's prescription requirements.

There are cots for children who do not feel well enough to play or who need to rest, and trained child care workers make sure that every child is held and cuddled with lots of TLC. ●JW



MAKING A KID COMFORTABLE is just one of the many forms of "tender loving care" provided by TLC House charge nurse Kathy Byers, RN.

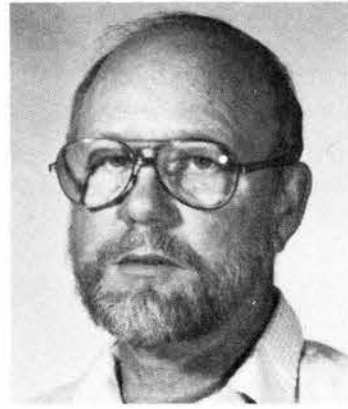
MILEPOSTS

LAB NEWS

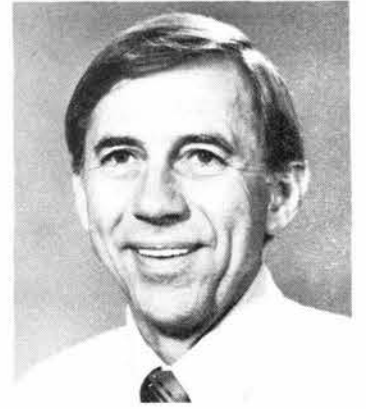
DECEMBER 1986



Bob Graham (8271) 25



Don Shadel (7131) 30



Laverne Zipprich (5122) 30



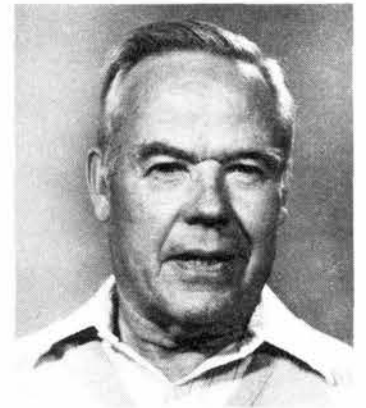
Jim Walston (3155) 30



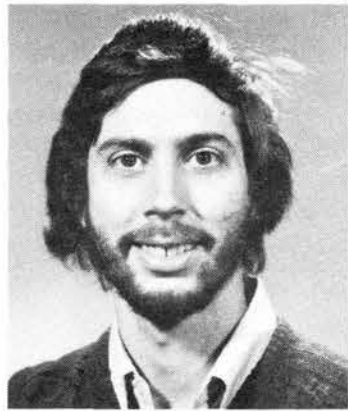
Janet Bauerle (5145) 10



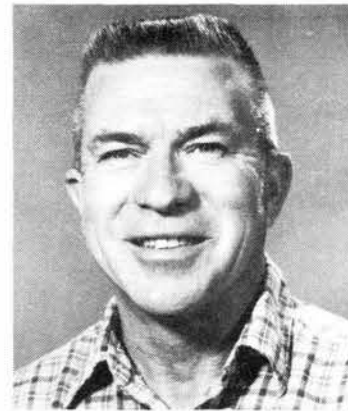
Jerry Johnson (3434) 10



Jerry Hinman (7474) 35



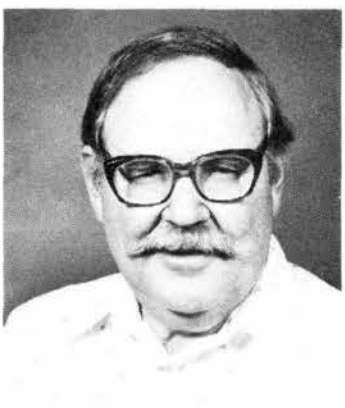
John Mareda (2644) 10



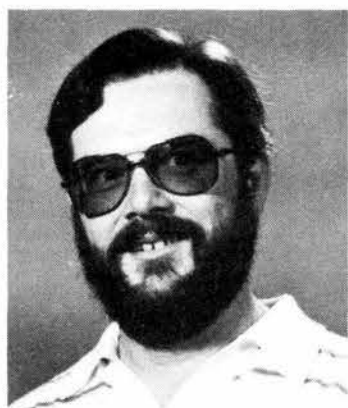
Lynn Loveland (7531) 10



Nancy Hall (2523) 10



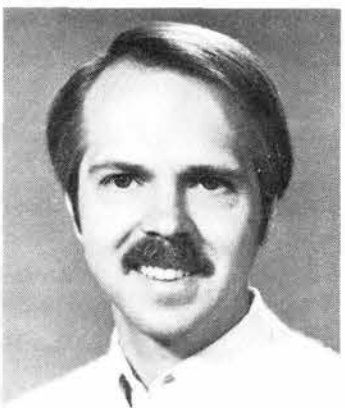
Earl Rush (6227) 20



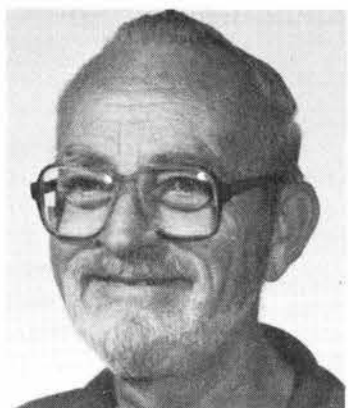
Greg Donohoe (9133) 10



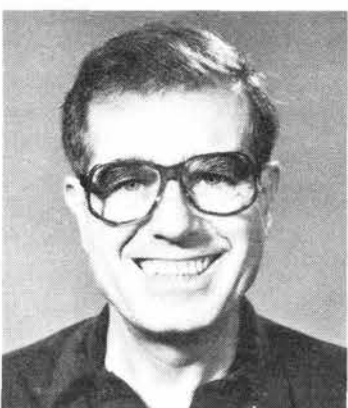
Lyle Porter (5248) 35



David Reedy (1522) 10



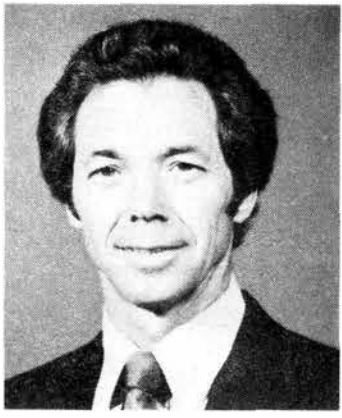
Lloyd Sandgren (7124) 30



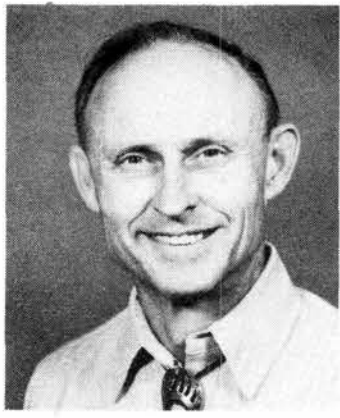
Sanders Dolce (7116) 20



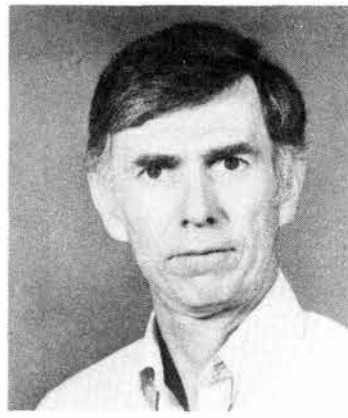
Dolly Dollahon (3723) 30



Johnny Biffle (1523) 20



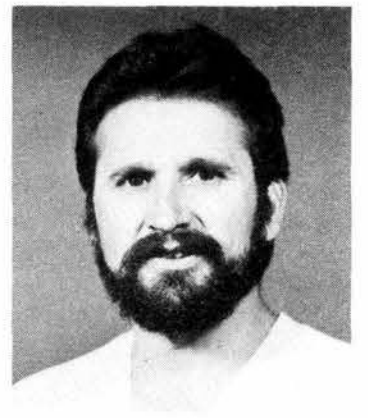
Ralph Fox (5113) 35



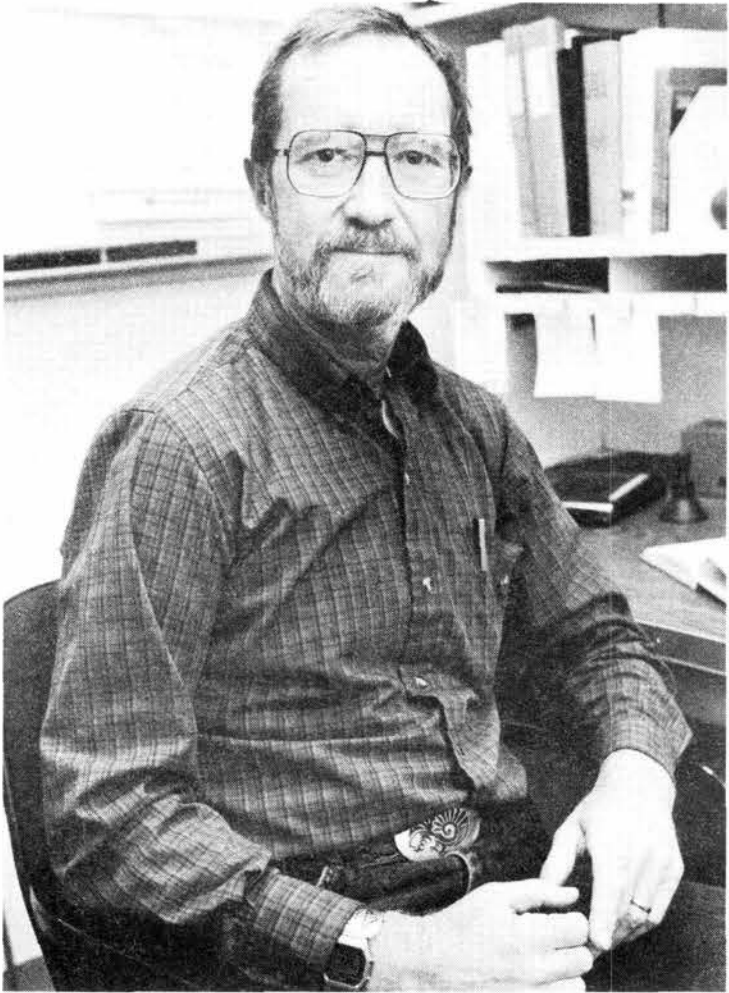
Julian Bartlett (5324) 25



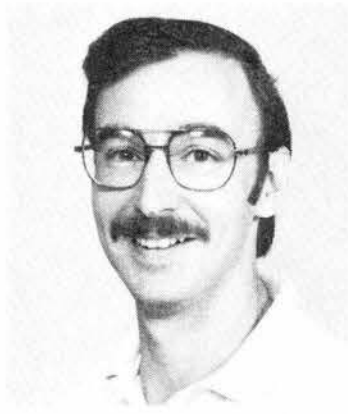
Matt Connors (8024) 35



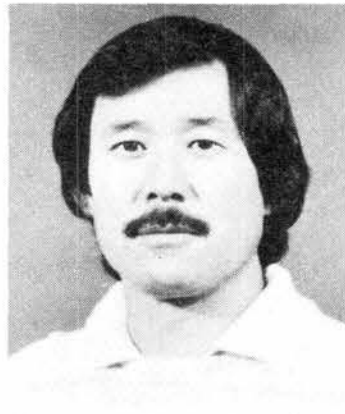
Bob Dubois (7485) 10



Ken Hueter (9115) AT&T 26



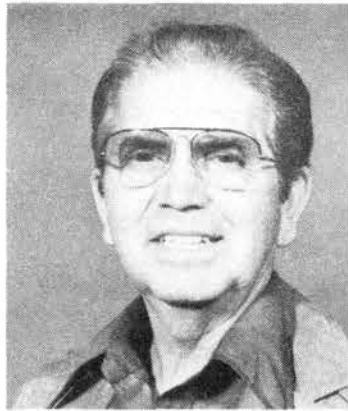
Gerry Giovacchini (8443) 15



Wayne Yoshimoto (7474) 10



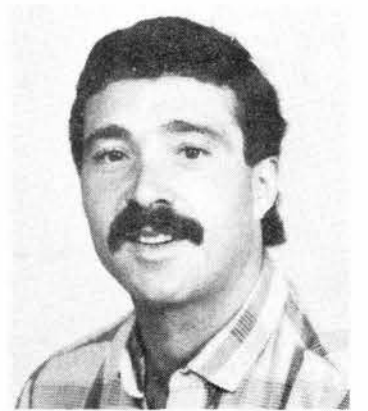
Pat Gildea (8183) 30



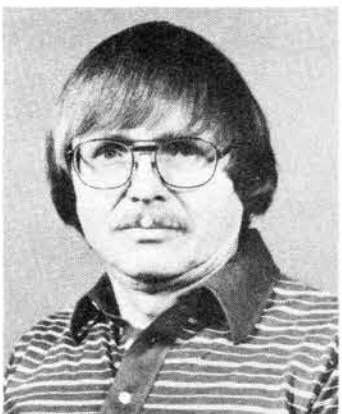
Jose Garcia (2631) 30



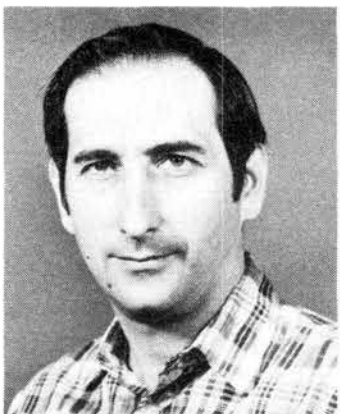
James Young (3434) 15



Val Ori (8347) 10



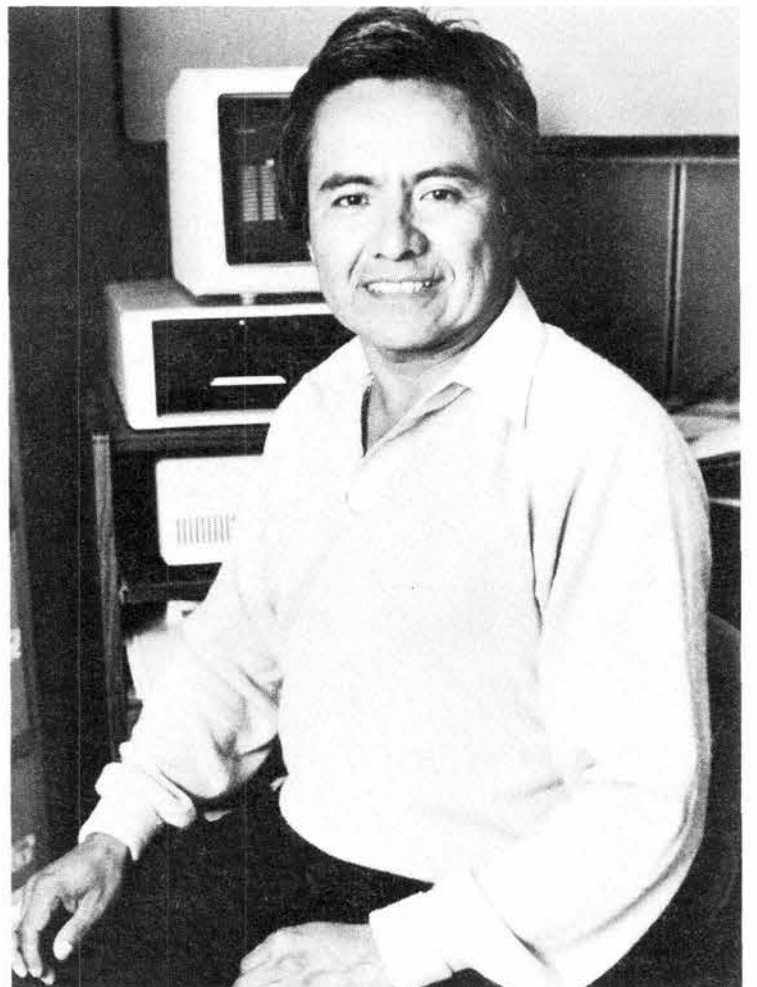
Don Stuart (1152) 20



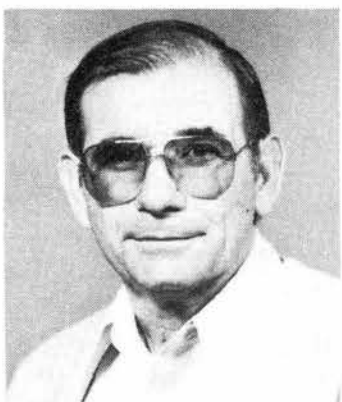
Charles Joerg (2534) 20



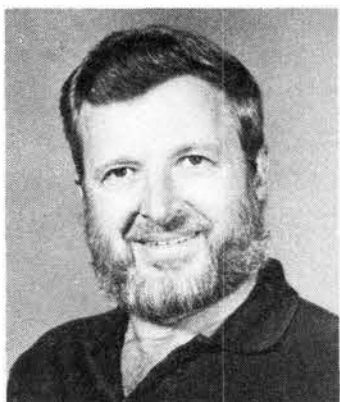
Ron Ludolph (8257) 10



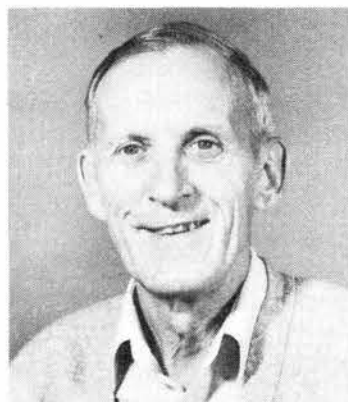
Emery Chavez (155) 20



Jack Burt (2857) 30



Mac Weaver (1651) 30



Jim Volkman (2858) 30

Take Note

Several Sandians are appearing in a holiday performance of "Amahl and the Night Visitors" at St. Timothy's Lutheran Church (211 Jefferson NE) on Dec. 6 and 7 at 5 p.m. Dick Schwoebel (1800) and his wife Jennie, and Neal Nelson (2336) and his wife Lois will be singing and dancing in this musical fantasy written for children. Dick will sing the role of King Melchior; Jennie has the role of the mother.

* * *

Ken Frazier (3161), author of *People of Chaco*, will be available for discussion and book signing on Dec. 7 from 2-4 p.m. at Book Fare (5901 Wyoming NE).

* * *

Currently on display in the Bldg. 802 lobby are watercolors and Chinese brush paintings by artist Faith Perry (on leave of absence from 3523). The paintings will hang there until Dec. 19. Faith also has a one-woman show at Sara's Restaurant & Gallery (3109 Central NE), and work appearing in the juried NM Watercolor Society Show at UNM's Thompson Gallery. Faith must have been very busy, because she's also participating in Weems Artfest in the Agriculture Building at NM State Fairgrounds on Dec. 5-7.

* * *

The next meeting of the New Mexico Network

for Women in Science and Engineering, Albuquerque Group, is scheduled Dec. 10 at 6:30 p.m. at the home of Patricia Trelue (5255), 3608 Holiday Ct. NE. Ruth David (7121) will speak on "Nevada Test Site — An Insider's View," and Barbara Torres, BDM Corp., will discuss "The Rio Grande Research Corridor." The cost is \$5 and includes a social hour and dinner. Call Jennie Negin (3411) on 4-3202 or Ellen Cronin (6330) on 4-2475 before Dec. 9 to make reservations.

* * *

The 1986 Marine Corps Reserve "Toys for Tots" program will collect donations of new toys for needy children on Dec. 8 from 7-8:30 a.m. at each of the gates to Area I. The local coordinator of the program is Eugene McPeck (3434), a staff sergeant in the Marine Corps Reserve. For more information, contact Eugene on 4-3155.

* * *

Save the Children, a private organization that helps needy children through community development, is asking for help this holiday season. Central to Save the Children's approach is the identification and implementation of activities that benefit all the residents of a community — children and adults alike. Since most of Save the Children's efforts are directed toward these activities, the sponsors are asking

for donations of toys, clothing, books, personal items, and food this holiday season for New Mexico Indian children. This will be the only happy event of the season for some of the less fortunate children. For more information on how to help, call Jim Trujillo, Director of New Mexico Indian Nations Program, on 262-2197.

* * *

Sanado Woman's Club will hold its Christmas celebration on Dec. 9 at 11:30 a.m. at the Continental Inn (6000 Pan American Freeway NE). Special Christmas entertainment will follow a lunch (\$8.25). Call Marsha Cook on 296-3064 to make reservations.

* * *

SERP is offering classes in beginning and intermediate conversational Spanish, and a course called "Gemstones of the World: Appreciation and Investment." The Spanish class meets Tuesdays and Thursdays from Jan. 6 to 29. The beginning class is 7-8 p.m.; intermediate 8-9 p.m. Cost is \$10 and includes use of books. The gemstones class is in four 1-hour sessions from 7 to 8 p.m. from Jan. 15 to Feb. 5. Cost is \$35. For more information or to sign up, contact the Recreation office on 4-8486.

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to Div. 3162.

Ad Rules

1. Limit 20 words, including last name and home phone.
2. Include organization and full name with each ad submission.
3. Submit each ad in writing. No phone-ins.
4. Use 8 1/2 by 11-inch paper.
5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per category per issue.
8. No more than two insertions of same ad.
9. No "For Rent" ads except for employees on temporary assignment.
10. No commercial ads.
11. For active and retired Sandians and DOE employees.
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

TWIN BED, maple, bookcase headboard, frame; Early American twin bed and rails; chair, recliner, tweed-type nylon fabric; maple end table w/magazine space. Pitti, 256-1629.

OVEN/MICROWAVE, Litton standing-up, electric, harvest gold; self-cleaning oven, 4-burner cooktop, microwave is on top, 30" x 6", \$249. Barr, 821-5870.

REFRIGERATOR, Montgomery Ward, white, 19.6 cu. ft., less than a year old, \$400. McBrayer, 293-4076.

6 DINING CHAIRS, oak Sofa Block, upholstered, \$120 OBO; 5 UniRoyal steel-belted whitewall tires, 195/70R-13, \$25. Murray, 821-1537 after 5:30.

POTBELLIED STOVE, complete, \$100; 8' x 5' braided rug, \$30; pine end table, \$40; bedside table w/tablecloth, \$15; curtains, Perea, 898-8328.

KING-SIZE WATERBED, bookcase headboard w/mirror, 6-drawer pedestal, \$200; Kenmore portable dishwasher, \$50; small doghouse, \$25. Archibeque, 242-7097 evenings.

QUEEN HEADBOARD w/frame, extra-large chest, night stand, and matching mirror, \$300. Hines, 821-8592.

DOUBLE BED, Ethan Allen solid cherry, headboard, footboard, and rails, \$400 OBO. Erickson, 299-6824.

MOTORCYCLE HAULER, Trail-A-Bike, mounts on hitch tongue, holds front wheel, rear rolls, for bikes less than 300 lbs., \$25. Schkade, 292-5126.

BUNNIES, \$5/ea. OBO. Beck, 299-7225.

WHEEL & TIRE for Jeep, \$10; New Zealand fleece queen-size mattress pad, paid more than \$200, sell for \$75. Watterberg, 299-8517.

ROWING MACHINE, West Bend 5100, cushioned seat and handgrips, tension adjustable, pivoting foot pedals, fully assembled, \$150. Forrest, 265-1871.

ADMIRAL CAMPER SHELL, for small (Luv-size) pickup, 65" x 76" x 28", \$150; Heierling ski boots, size 7-1/2, worn 1 season, \$20. Berman, 296-5640.

PIANO w/bench, \$550. Coalson, 298-0061.

7' POOL TABLE, coin-operated, w/accessories, \$750; '46 Willys Jeep for parts, \$400. Servis, 865-6395 or 865-7629.

ANTIQUE WALL PHONE and mantel clock (both work), Navajo rugs, lounge chair, misc. items; moving sale. Harrison, 883-5411.

THEATRE TICKETS: 2 seats at KiMo for "Who's Afraid of Virginia Woolf?", March 14 at 2 p.m., cost \$12/ea., sell for \$10/ea. Robinson, 255-0114.

COCKER SPANIELS, 10 weeks old, 3 black & white males, black male, gold female, white female, \$150/ea. Caldwell, 821-7110.

PISTOL, .22 Ruger Single-Six, 9-1/2" barrel, walnut grips, \$125; Star Wars R2D2 case w/40 characters, \$95. Gregory, 344-1436.

19" EQUIPMENT RACKS, 40" high x 22" deep, one with casters, no charge, just remove from my garage. Mayes, 821-0698.

ELECTRIC TYPEWRITER, portable Sears Scholar, \$125 OBO. Harrison, 255-7978.

AQUARIUMS: 60" wide, 40" long, glass tops, fluorescent strips, U.G. filters, Whisper 800 pumps, Supreme heaters, \$150 and \$95. Snodgrass, 299-1052.

TWO END TABLES, 30" sq., oak veneer; matching coffee table, \$300 OBO. Treadway, 345-7302.

OAK WALL UNIT, 7 adjustable shelves and enclosed cabinet; double bed, folds up for storage. Ferguson, 293-2853.

WICKER PAPANAS CHAIR, w/cushion, \$30. Brigham, 293-6914.

PIANO, Yamaha, walnut console and bench, original owner, transferable warranty, \$1700. Gillen, 298-2282.

REFRIGERATOR, 19.6 cu. ft., Whirlpool, icemaker, harvest gold, \$310; Weber grill, 22" diameter, w/stand, \$20. Doughty, 296-4142.

CAMPER SHELL, \$300; Toyota pickup seat, \$25; Michelin tires, 225x75. Gorman, 898-9300.

TECHNICS TAPE DECK, model RS-631, Dolby, memory, auto-stop, ser-

vo motor, \$30. Neal, 291-8825.

ALUMINUM STORM DOOR, pre-hung, self-storing, right hand, 36" wide, 80" high, \$50. Walker, 821-5938.

NORGE GAS DRYER, 2 heat settings, \$40. Brion, 298-1761.

COLEMAN CABIN TENT, 8' x 10', used twice, \$120; windshield for '79 Honda Civic. Levan, 821-0980.

BASS GUITAR, Fender P-Bass copy, built w/custom parts, hardshell Fender case, \$400. Brown, 823-9155.

GREEN & GOLD SECTIONAL SOFA, extra-large, w/matching end table and pillows, \$500; matching round chair, \$100 OBO. Mayer, 299-8524.

K2 SKIS, Salomon bindings, \$65; Caber boots, size 9-10, \$50; Little Tyke Railroad, battery-operated, \$70. Middleton, 299-6148.

UNM BASKETBALL TICKETS, pair, Oklahoma State, Invitational Tournament, Winthrop games, total ticket price \$60, sell for \$40. Hernandez, 268-5000.

10 PORTUGUESE SWEATERS, hand-knit, wool, for men and women, cardigans and pullovers, \$60. Brown, 821-7553.

CELESTRON 8 TELESCOPE, complete, (12, 25, 40mm 1-1/4" oculars), wedge, Barlow, Porro, teleextender, piggyback mount adapters (Nikon), \$750. Morosin, 298-0994.

PUPPIES, Chinese Shar Pei. Erickson, 898-2208.

ELECTRIC PIANO, Fender Rhodes, \$400; Armstrong silver-plated flute, \$150; Bundy piccolo, \$50. Lewis, 256-0311 after 5.

9' SOFA, green, cut velvet, \$300 OBO. Pope, 822-1805.

APPLE II+, monitor, 2 drives, 80-column Prowriter printer, software, \$1100 OBO. Gruer, 296-8163.

SKIS, Rossignol Competition, 190cm, \$40; Rossignol Strato, 175cm, \$20; Scott boots, size 10-1/2 or 11, \$20. Bailey, 294-4218 after the weekend.

LADDER STABILIZER, aluminum frame w/rubber knobs, rest on fascia board, \$15. Lagasse, 293-0385.

CLOTHING RACKS, glass fireplace door, electric broom, bed frame, large bamboo curtains, ceiling light fixtures. Roan, 892-7299.

SKIS, Hart Mystique, 180cm, without bindings, \$20. Liffe, 822-1946.

TELESCOPE, 60mm Jason 454X refractor, equatorial mount, 3 eyepieces, other accessories, box and packing, \$140. Stevens, 883-0480.

81 DATSUN 280ZX coupe, bronze buckskin, PS, PB, 5-sp., AM/FM cassette, T-tops, 61K miles, \$6950. Loescher, 299-9477.

83 NISSAN STANZA, 4-dr., 4-WD, PS, AC, AM/FM, XE package, 42K miles, \$5000. Neel, 821-4270.

25' SOUTHWIND RV, Class A, loaded, Dodge 440, \$16,900. Barth, 294-3357.

WOMAN'S 3-SPD. BICYCLE, 26", \$35 OBO. Zirzow, 294-7296.

'78 VW Dasher STATION WAGON, AT, AM/FM cassette, AC, garaged, \$1450 firm. Lee, 266-9418.

'76 CHEV. MONZA, 2-dr., 85K miles, \$450. Berman, 296-5640.

'75 BUICK SKYHAWK, V-6, standard, 2-dr.; new; radiator, battery, sheepskin seat covers, stereo, \$1000 OBO. Newman, 294-6334.

'84 CHRYSLER LASER TURBO XE, 5-sp., all factory options, extended warranty, 25 mpg, original owner, \$8500. Haines, 281-1307.

BICYCLES: 16" w/training wheels, \$15; 20" Roger DeCoster BMX, mags, \$50; 20" BMX, dual handbrakes, \$40. Kerschen, 821-2848.

'70 EL CAMINO, classic design, vinyl cover for bed, trailer hitch, below book. Williams, 299-9150.

'73 SUBARU, 2-dr., 4-WD, 4-sp., 92K miles, AM/FM cassette, \$450 OBO. Siegel, 281-2438.

'81 FORD F150 4X4, 4-sp., 6-cyl., AM/FM cassette, new 11-in. lift kit, \$4500. Waddles, 293-1805.

'80 GRANADA, low mileage, 4-dr., PS, PB, AT, AC, new AM/FM cassette and front tires, \$2100. Cooper, 884-1363.

'80 FORD PINTO, 38K miles, AT, AC, PB, AM/FM stereo, new tires, \$2200 OBO. Fraley, 296-6795.

'80 HONDA SILVERWING INTERSTATE, 500 GLL, fully dressed, saddlebags, cover, trunk, shaft drive, water-cooled, 11K miles, \$2500. Hutchins, 881-9654.

'63 CORVAIR 110 COUPE, new shocks, brakes, upholstery, and dash pad, steel radials, AM/FM tape, \$895 OBO. Patrick, 883-1413.

'78 HONDAMATIC CB400, blue w/white windjammer and saddlebags, chrome crash bars and bag rack, \$850. Martinez, 821-6096.

'85 HONDA CIVIC CRX, AM/FM cassette, red w/black and gray trim. Shortencarrier, 292-3575.

'81 YAMAHA SECA 550, Kerker headers. Holt, 294-6928.

'71 CHEV. CHEVELLE MALIBU, 4-dr., maintenance record, V-8, AC, PS, PB, tilt wheel, \$1100 OBO. Keiss, 299-6610 after 5:30.

'70 NOVA, 6-cyl., mags, standard transmission on floor, new tires, \$750 OBO. Reed, 821-6315 after 5:30.

'76 CONCORD MOTOR HOME, 28', 5kW generator, 2 roof AC, 30K miles. Eiffert, 268-1854.

'78 OLDS CUTLASS SUPREME, one owner, radio, AC, heater, PS, PB, windshield washer, \$2150 cash. Nielson, 294-1281.

GIRL'S BICYCLE, Rampar Monarch,

24", 10-sp., recently tuned, includes rear-view mirror and Zefel tire pump, \$100 firm. Stronach, 298-5289.

'84 PONTIAC 6000-LE station wagon, 6-cyl., 7.3K miles, extras, \$7900. Curtis, 281-3519.

'70 CADILLAC ELDORADO, gold, 66K miles, AC, PS, PW, \$1600. Ginn, 883-0004 or 892-0436.

'80 DATSUN 200SX, 5-sp., AM/FM cassette stereo, \$2500 OBO. Lockwood, 821-6331.

REAL ESTATE

3-BDR. HOME, Taylor Ranch, newly constructed, 1-3/4 baths, large lot, FP, vaulted ceilings, appraised at \$82,000, sell for \$79,900. Garcia, 836-5661.

2-BDR. MOBILE HOME, 12' x 52', furnished, set up in SE Heights park, \$5500. Delnick, 268-8373.

.76 ACRE BLDG. LOT in Sandia Heights, 1026 Tramway Lane, \$75,000. Barr, 821-3825.

2-BDR. MOBILE HOME, Redman, 14' x 64', 1 bath, deck, wet bar, washer, dryer, stove, dishwasher, \$10,500. Fimple, 293-3911.

1-1/2 ACRES, 3 adjoining lots, Conchas Lake, septic tank and water on center lot, \$7200 or \$2000 down and take over payments. Heider, 897-0752.

5 ACRES, heavily wooded, mountain home, in Arkansas near Bull Shoals and Norfolk Lakes. Eiffert, 268-1854.

WANTED

WALL OR UNIT HEATER, no larger than 40,000 BTU output, prefer one converted for propane. Prior, 281-5532 after 6.

WROUGHT IRON (or similar) PATIO TABLE w/matching chairs. Marchi, 291-9681.

MALE PUPPY, American Eskimo cross, to replace one that ran off, for Christmas gift. Harron, 898-6055 after 6, before 9.

WITNESS to hit-and-run accident that occurred between 1 and 6:30 p.m. on Nov. 21, involving light brown '84 Grand Prix parked south of Bldg. 822 (second shift). Carriaga, 877-2646.

TV DONATION for blind couple, need good sound, no picture. Bazar, 898-1467.

ENCYCLOPEDIA SET DONATION, for a special-education learning-disabled classroom. Altwies, 292-3884.

WORK WANTED

PART-TIME JOBS for UNM athletes, 10-15 hours week, available full-time during the holidays after Dec. 19. Douglas, 281-9843.

Better Not Cry, We're Telling You Why

TOMORROW'S A BIG DAY, as Mr. and Mrs. S. Claus put in an appearance at the C-Club for the kids' annual Christmas party. The fun begins at 10 a.m., when "Good Vibrations," a singing group from West Mesa High School, entertains with holiday tunes. A hilarious clown troupe performs a skit from 10:20-10:30, and then makes balloon animals for party goers the rest of the morning. From 10:30 on, kids have a chance to tell the jolly old fat man in the red suit all about their wish lists for Christmas. It might not be a bad idea to put in a word with Mrs. C. as well — power behind the throne and all that . . . Other entertainment includes cartoons on the Club's projection TV from 10:30-noon, when the party finally shuts down. Popcorn, soft drinks, coffee, and doughnuts are available to stave off hunger pangs. Admission is \$1 or a can of food, all of which will go to the Salvation Army. Members' kids only, please; bring your membership card to show at the door.

YOUR ONE AND ONLY chance to enjoy that Sunday brunch bargain this month is this Sunday, Dec. 7. The budget-buffer buffet, served from 11 a.m. to 2 p.m., features ham, sausage, baron of beef, scrambled eggs, hash browns, the best green chile in town, fruit salad, salad bar, and much more. And all this bounty goes for the unbelievably low price of \$4.95 for adults, half price for kids under 12. Bring the whole family and enjoy. Call the C-Club office (265-6791) right now for reservations.

OK, SINGLES, here's your opportunity to get a rollicking start on the holidays! This month's mingle on Dec. 10 is a good old-fashioned Christmas party with the nicest bunch of people you'd ever care to meet. Very special prices prevail for beer, wine, and munchies from 4:30-6 p.m. What's so special? All of the above are free during those hours — can't get much more special than that! The DJ, Dunn's Dance Machine, plays from 5-9. Come on out and enjoy a great party.

THERE'S A PARTY for everybody at this time of year, and the Thunderbirds are no exception. These folks whoop it up from 1-4 p.m. on Sunday, Dec. 14. All kinds of snacks and hors d'oeuvres available, along with a no-host bar. That renowned group, the Bob Banks Trio, provides the music. Knowing those T-Birds like we do, we're predicting a bunch of singing once everybody gets limbered up! Here's your chance to wish all these good folks the merriest of Christmases.

If you're a T-Bird RV club member, you're gonna be busy this month because there's yet another party on tap. This group of happy wanderers gets together for dinner at Bella Vista on Dec. 12. More info from wagon masters Tom Brooks (344-5855), Bill Minser (299-1364), or Andy Railey (898-0519).

DON'T MISS OUT on the only two-for-one special dinner in December. Scheduled for Dec. 19, it features prime rib or snow crab — your choice of two dinners for the bargain-basement price of \$14.95. Afterwards, the Isleta Poor Boys belt out the kind of music that every sagebrush stomper knows and appreciates. We don't know if those favorites from Isleta will come dashing through the snow in a one-horse open sleigh, but we bet they'll play "Jingle Bells" if you ask them to! Make that dinner reservation right now.

NOT TO BE OUTDONE on the partying, Coronado Ski Club members (who party at the drop of a hat anyhow — never mind the holidays) are celebrating on Tuesday, Dec. 16, in the ballroom. Jarret Galbreth, MD, will talk about ski injuries and how to avoid them by getting in shape for schussing before you take to the slopes. As usual, a few lucky people will win some fabulous door prizes.

The Ski Club has several trips planned this month. Some members are up at Wolfcreek this weekend. Other December trips: Purgatory, Dec. 12-14;

and Utah, Dec. 28-Jan. 2 (a super way to spend part of your time off during the holidays).

A NEW WRINKLE (sorry, Father Time) in the New Year's Eve party is an elegant buffet dinner to go along with all the other festivities. Say goodbye to old, decrepit 1986 and welcome brand spanking new 1987 at the big C-Club celebration, starting at 6 p.m. The buffet, served from 7-10, gives you a truly great menu selection: full salad bar, prime rib or snow crab, broccoli with hollandaise sauce, baked potatoes, tea and coffee, and a magnificent slice of cheesecake with cherries to top off the whole thing. Two terrific bands provide the dancing music from 9-1 upstairs and downstairs: It's Spinning Wheel in the ballroom with Latin favorites, and Western Flyer shuffle music in the Eldorado room. Party goers sample all sorts of wonderful hors d'oeuvres throughout the evening, and get party favors and noise makers, along with a bottle of champagne and continental breakfast at midnight. All this food, fun, and entertainment goes for the unbelievably low price of \$40/couple, \$20/single. If you can't eat dinner at the Club that night, but still want to get in on all the other action (and goodies like the champagne and breakfast), it costs just \$10/person. Time's a'wasting, though; the place is filling up fast, so make your reservation pronto. Tickets must be picked up no later than Dec. 17.

NOW LISTEN UP, because the C-Club has some schedule changes in December that you ought to know about. Don't show up for lunch on Dec. 24, because lunch won't be served that day. However, the famous annual close-down party'll be in full swing on the 24th from noon-6 p.m. If you've never been to the holiday close-down festivities, your education is not complete . . . It's free munchies all afternoon, along with those spirits (Christmas and otherwise) served up by Joe, the friendly bartender. And this is a fine opportunity to wish all your friends greetings of the season. Don't miss it!

And, since that hard-working C-Club crew needs a vacation too, the Club will be closed from Dec. 25 through Jan. 1 — with the exception of New Year's Eve, of course. It'll reopen on Jan. 2, so you can get 1987 off to a good start with a two-for-one dinner special.

FLY ME TO THE MOON — Well, maybe not quite that far. But you're in for some pretty neat trips if you sign up for some of those offerings the C-Club Travel Committee plans:

Cherry Blossom Special — This trip, set for April 4-11, puts you in Washington, D.C., and is

timed perfectly. Those renowned cherry blossoms are in full bloom just about then, and it's festival time in D.C. You'll visit points of interest in the capital such as the White House, the Smithsonian, and Capitol Hill. But there's much more. From there, it's on to historic Virginia and Mount Vernon, Monticello, and the cities (towns?) of Williamsburg, Richmond, Yorktown, and Jamestown. On your return to Washington, you'll see the Cherry Blossom Festival Parade — a colorful and exciting pageant if there ever was one. The tab of \$777/person covers all of the above, plus seven nights' lodging, RT air fare, charter bus, and some very special meals.

Las Vegas South — Otherwise known as Laughlin, Nev., is just the place to be, come next February. This ever-popular adventure (and you know it's an adventure if you've ever visited Laughlin's gaming tables!) is scheduled Feb. 20-22. For \$105/person, you get two nights' lodging at the Riverside Hotel, round-trip charter bus fare, tours of Davis Dam and Lake Mohave, snacks and drinks along the way, and some meals.

Fun & Games

Bowling — The SANDOE October Bowler-of-the-Month winners are: Joe Lucero (7474), Men's Scratch, 701; Karen Varga, Women's Scratch, 584; Charlie Carter (7472), Men's Handicap, 758; and Mildred Smith (2831), Women's Handicap, 661. James Vernon and Cheryl McDade, guests, won the SANDOE Scotch Doubles Tournament held Nov. 15-16 at Fiesta Lanes. Second place went to Bruce Gunckel (3742) and Nancy Hall (2523).

* * *

Cross-Country Skiing — A beginning cross-country (Nordic) skiing class is being offered through the SERP program. Three classes are available — Jan. 15 and 17, 22 and 24, 29 and 31. Cost is \$20 per person and includes all equipment. Class consists of a 1-1/2 hour classroom session and a day on the hill. Call the Recreation office on 4-8486 to sign up.

* * *

MWR — New MWR cards are available at the Que Pasa Recreation Center. The card will be good for 12 months from the date of purchase, and the cost is \$24 (no increase). Members are entitled to use all the MWR facilities including the gyms, bowling lanes, recreation center, child care, arts and crafts shops, and golf course. Current cards expire Jan. 1. Que Pasa is open 9 a.m.-5 p.m. every day. New pool patches will be available Jan. 1. If you need more information, call the Center on 4-5420.



C-CLUB MEMBERSHIP CLERK Suzan Baldonado is snowed under these days with 1987 Club membership cards. She'll be mailing the cards this month to all employees who pay their dues by payroll deduction. If you don't receive your card in the next several weeks, give the Club office crew a call so they can check out their address records.